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The U. S. Rabbit Experiment Station, Fontana, California

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Robert B. Casady 1/

The U. S. Rabbit Experiment Station at Fontana, California, occupies the unique position of being the only U. S. Department of Agriculture field station in the United States devoted entirely to rabbit research. It is primarily, as the name indicates, a research station but, due to its relationship with all 50 States, a considerable amount of time is also spent in Extension-type work. For example, the Station routinely answers inquiries from all parts of the United States, and from foreign nations, regarding methods of rabbit raising, rabbit diseases, nutritional aspects, breeding and rabbit products. The Station also renders considerable local aid with respect to the diagnosing and treating of ailing rabbits, and advising in proper management techniques.

The Station consists of a 5 acre tract, on which are an administration building, residence, various types of buildings for sheltering hundreds of hutches, barns for housing feeds, storage rooms, shop, an office and records room, a processing room, and a garage. Two isolation units are maintained in conjunction with the rabbitry, one of which is equipped with air conditioning to permit studies under controlled temperatures. The Administration Building contains offices, a library, and laboratories where experiments in the fields of bacteriology, parasitology, pathology, and physiology may be conducted; also a stock room, photographic dark room, and supply room.

The research activities of the Rabbit Experiment Station are classified under two separate divisions of the Agricultural Research Service, USDA: The Animal Husbandry Research Division (AH) and the Animal Disease and Parasite Research (ADP).

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Some of the contributions to the industry, which have arisen from research projects under these Divisions, are presented below.

### The Animal Husbandry Division

Tests with feed crops raised in various regions of the United States, and their milled byproducts, have been conducted to determine their nutritive value and their use in making up rabbit rations. These results have contributed in a large measure to the present system of feeding rabbits pelleted rations and to the various formulae used by commercial milling companies in their prepared rabbit feeds. In conjunction with these tests, and as indicated in the available USDA Farmers' Bulletins, we are now able to recommend certain levels of various nutrients such as protein, fat, and fiber, for dry does, herd bucks, developing juniors, working does, and does with suckling litters. Although much yet remains to be done with respect to determining specific nutrient requirements, the Station has played a major role in standardizing the feeding practice for rabbits.

A great deal of work has been done in the development of labor-saving methods, and various items of equipment for the rabbitry. Although many of these ideas and devices did not originate at the Experiment Station, their development and incorporation into the rabbitry has resulted in a feeding and management program that can reduce the labor requirement from 14 man-hours, per doe, per year to approximately 2 or 3, which is about 1 man-hour, per litter weaned.

One of the most important aspects of management in which the Station has played a prominent role has been the development of a technique for palpating does to determine pregnancy. When practiced properly, this technique is of great economic value in the saving of feed, time, and labor in the management of working does.

For the last 25 or more years, one of the major problems of concern to the rabbit industry has been the incidence of enteritis. Although no specific answer has been obtained, current information indicates that (1) one or more attacks do not develop immunity, (2) the greatest losses occur among developing young 4-1/2 to 7 weeks of age and then gradually subside, (3) genetic factors are probably not involved, (4) sanitation measures, although desirable, are not a factor in causing or controlling enteritis, (5) nutritional factors do not seem to be responsible, and (6) weather or season are not considered to be contributing factors.

All attempts to fortify rations with certain vitamins and minerals have proved to be of no value in preventing enteritis. The use of antibiotics has in some instances reduced enteritis losses, but results are inconsistent and it has yet to be determined why the various additives perform in this manner.



Genetic studies of weaning records have indicated that sex, and size of litter in which a rabbit is weaned, have little effect on weaning weight. Also, in litters where mortality reduces the numbers to one, two, or three, there is a tendency for more females to be weaned than males. This would suggest that under adverse conditions mortality among males is higher than among females, or that females are more resistant to various environmental and disease factors which tend to reduce litter size prior to weaning.

Other problems and studies that have merited considerable attention at the Station include: (1) the duration of pseudopregnancy in the rabbit, (2) the cause of sore hocks and methods of dealing with this problem, (3) the cause of malocclusion of "buck teeth," and (4) woolly-pod milkweed poisoning or "head down" disease.

In addition, investigations have included the physical composition of fryer rabbits, the cause and method of eradicating yellow fat as well as "woolly" from a herd of rabbits, and the value and use of rabbit manure.

Extensive studies have also been made of factors that influence the quality of pelts such as age, ration, and climate. In this respect, the cause of delayed wool growth in Angoras has been found to be a genetic factor.

#### The Animal Disease and Parasite Research Division

Coccidiosis studies have been concerned with the life cycle in rabbits, surveys on its prevalence, the relation of hutch construction to this disease, and methods of control. Results have shown that the use of so-called "self-cleaning" hutches with wire-mesh floors and proper sanitation will reduce the incidence and reinfestation, and that effective control can be obtained by the use of sulfaquinoxaline in the diet at a level of 0.025 percent. Sulfaquinoxaline eliminates infections due to liver coccidiosis (Eimeria stiedae), and reduces the number of oocysts in intestinal coccidiosis (E. perforans, E. media, and E. irresidua), by interfering with the life cycle of the organism.

With respect to enteritis, various studies have been conducted relating to the blood picture associated with this condition, and although results have not been published, there is evidence to indicate that there may be liver damage and that certain antibiotics may reduce mortality. The transmission of enteritis has not been accomplished, and all attempts to reproduce the symptoms in test animals have failed. Work is under way to determine if bacteria may be a cause of enteritis.

More than half of all respiratory infections in rabbits are caused by Pasteurella multocida. The strain most commonly found is Type II, but Types I, III, and IV have also been isolated.

Respiratory mortality due to pasteurellosis has been reduced by the addition of sulfaquinoxaline or NF-180 in the ration.

Pyometritis, an infection of the uterus, is most commonly caused by Pasteurella and can be caused by a variety of bacteria. The important factor is the introduction during a post-ovulatory phase. In a pre-ovulatory phase, bacteria will not survive in the uterus.

Preliminary studies have shown that diets deficient in vitamin A may result in hydrocephalus, the damage to the brain taking place in early pregnancy.

"Scabby noses," associated with colds and pneumonia, can be controlled by use of penicillin injections or a combination of penicillin and streptomycin. A single dose usually is sufficient to clean up the condition.

Lindane has been found to be effective in control of ear mites. While not as effective as the iodoform-ether mixture, lindane is easy to apply and inexpensive in treating large numbers of rabbits.

Myxomatosis has been recovered from wild California Brush rabbits. Active and virus producing lesions lasted 3 months in these animals and it is believed they are the reservoir of infection in California.

The fungus, Trichophyton mentagrophytes, has been found to be the causative agent of favus in rabbits. An antifungal drug, Griseofulvin, is highly effective in controlling the infection.

#### SUMMARY

Research in feeding and management is being carried on constantly to determine the most satisfactory and economical method of feeding and caring for rabbits, such as the suitability of various feeds in the rabbit ration, and equipment which will save time and labor. Breeding problems are also under consideration, including an extensive study, in cooperation with the University of California and the Biometrics Division of the Agricultural Research Service, of previous breeding records, to determine various maternal and environmental factors influencing production, the heritability of such factors, and the genetic correlation between them.

Possible causes, prevention, and cure of enteritis, or "bloat," and various disease aspects of rabbit production, are subject to continued investigations. It is contemplated that future expansion of the research

program will allow more thorough investigations regarding the nutrient requirements of rabbits and various physiological and disease problems.

Results of the research program are released to the industry in the form of bulletins, circulars, pamphlets, articles in scientific journals, magazines and farm papers. Some of the publications issued by the U. S. Department of Agriculture are noted in List #9 entitled, "Publications on Fur Farming, Rabbits and Laboratory Animals." This list may be procured upon request from the Office of Information, U. S. Department of Agriculture, Washington 25, D. C.



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